UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/596,027	11/21/2006	Nils Krumme	5858-07500 SR 2003/14 US	1841

35617 7590 10/09/2008

DAFFER MCDANIEL LLP
P.O. BOX 684908
AUSTIN, TX 78768

EXAMINER	
ARTMAN, THOMAS R	

ART UNIT	PAPER NUMBER
2882	

MAIL DATE	DELIVERY MODE
10/09/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/596,027	KRUMME, NILS	
	Examiner	Art Unit	
	THOMAS R. ARTMAN	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 June 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *14-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *14-25 and 27-38* is/are rejected.

7)☒ Claim(s) *26 and 39* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 November 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 15 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear how the CT device may function if only 1 conductor exists while the current must sum to zero. It is further unclear how a single conductor may be parallel. The term parallel requires a second object in order to define the parallel direction. In the interest of expediting prosecution, the examiner shall assume that the claims should read "2 or 3" rather than "1, 2 or 3".

Claims 24, 25, 37 and 38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what a consumer is and how it relates to the claimed CT structure.

Claims 32 and 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear how the DC/AC converters, being on the stationary part, are able to supply power to the conductor arrangement being on the rotating part.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 27 and 29-36 are rejected under 35 U.S.C. 102(e) as being anticipated by Harada (US 6,674,836 B2).

Regarding claim 27, Harada discloses a CT system (Figs.1, 2, 8 and 10), including:

a) a stationary part 12 of a gantry having a bearing assembly (not explicitly shown) for rotatably supporting a rotating part 22 of the gantry, where the rotating part accommodates an x-ray tube 21 and a detector arrangement 32, where

b) the stationary part has at least one DC/AC converter 15 for generating an alternating current at a first frequency, where

c) the stationary part has at least one inductive coupler 17 supplied with alternating current from a DC/AC converter 15, and further where

d) the rotating part has at least one conductor arrangement 19 for engaging, exclusively in dependence upon position, with a section (m1, m2, m3…) of the entire length of the conductor arrangement (Figs.8 and 10) and for coupling electrical energy into the conductor arrangement (Fig.1).

With respect to claim 29, Harada further discloses that the conductor arrangement has a plurality of segments 18 along a circumferential direction (Figs.8 and 10).

With respect to claims 30 and 31, Harada further discloses a plurality of couplers 17 made of a soft magnetic material and engaged with the conductor arrangement at any instant of time (Fig.10).

With respect to claims 32 and 33, Harada further discloses that the plurality of DC/AC converters 15 each supply current to one inductive coupler at or close to a respective resonant frequency.

With respect to claim 34, Harada further discloses at least one series capacitance 24 and 31 that is connected in series with the conductor arrangement 19 or coupler 17, respectively (Fig.4).

With respect to claim 35, Harada further discloses at least one parallel capacitance 24 and 31 that is connected in parallel with the conductor arrangement 19 or coupler 17, respectively (Fig.6).

With respect to claim 36, Harada further discloses that the DC/AC converter 14 is adapted to detect a condition in which a coupler is not engaged with at least one conductor arrangement or segment thereof and is switched off accordingly (col.5, lines 17-19).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 14 and 16-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harada.

Regarding claim 14, Harada discloses a CT system (Figs.1, 2, 8 and 10), including:

a) a stationary part 12 of a gantry having a bearing assembly (not explicitly shown) for rotatably supporting a rotating part 22 of the gantry, where the rotating part accommodates an x-ray tube 21 and a detector arrangement 32, where

b) the stationary part has at least one DC/AC converter 15 for generating an alternating current at a first frequency, where

c) the stationary part has a conductor arrangement 16 supplied with alternating current from a DC/AC converter 15, and further where

d) the rotating part has at least one inductive coupler 18 for engaging, exclusively in dependence upon position, with a section (m1, m2, m3…) of the entire length of the conductor arrangement (Figs.8 and 10) and for coupling electrical energy out of the conductor arrangement (Fig.1).

Harada does not specifically disclose that the conductor arrangement is supported by support rods.

However, it is clear that the conductor arrangement 16 of Harada is not floating in space but is fixed to the stationary part in appropriate manners known to the skilled artisan for maintaining proper alignment with the rotating part.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Harada to support the conductor arrangement by support rods as a known method of fixing a conductor arrangement to a stationary portion of a rotating gantry in order to maintain alignment, absent any showing of criticality or unexpected results.

With respect to claim 16, Harada further discloses that the conductor arrangement has a plurality of segments m1, m2, m3… along a circumferential direction (Figs.8 and 10).

With respect to claims 17 and 18, Harada further discloses a plurality of couplers 18 made of a soft magnetic material and engaged with the conductor arrangement at any instant of time (Fig.10).

With respect to claims 19 and 20, Harada further discloses that the plurality of DC/AC converters 15 each supply current to one conductor and/or one segment of the conductor arrangement at or close to a respective resonant frequency.

With respect to claim 21, Harada further discloses at least one series capacitance 31 and 24 that is connected in series with the conductor arrangement 16 or coupler 18, respectively (Fig.4).

With respect to claim 22, Harada further discloses at least one parallel capacitance 31 and 24 that is connected in parallel with the conductor arrangement 16 or coupler 18, respectively (Fig.6).

With respect to claim 23, Harada further discloses that the DC/AC converter 14 is adapted to detect a condition in which a conductor arrangement, or a segment of the conductor arrangement, is not engaged with at least one coupler and is switched off accordingly (col.5, lines 17-19).

Claims 15 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harada, as applied to claims 14 and 27 above, respectively, in view of Steigerwald (US 5,608,771).

Harada does not specifically disclose two or three conductors through which currents flow so that the sum of the currents through all conductors is zero at every place of the conductor arrangement.

Steigerwald specifically teaches a two conductor system (Fig.4) defined by oppositely-wound cores. In this way, the stray magnetic fields are better suppressed (col.2, l.50-59).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Harada to have two conductors such that the currents through all conductors sum to zero at every place of the conductor arrangement in order to suppress stray magnetic fields, as taught by Steigerwald.

Allowable Subject Matter

Claims 26 and 39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art of record neither teaches nor reasonably suggests the additional limitation of the DC/AC converter having a modulated output frequency and frequency sweep as defined by the combinations as claimed in each of claims 26 and 39.

Response to Arguments

Applicant's arguments have been fully considered but they are not persuasive. Although the claims are new, most of the issues upon which the previous rejections were based still exist because the limitations under debate in the new claims are similar to the former claims and the prior art is the same. Therefore, the examiner will address Applicants' arguments as follows.

Applicants argue that Harada does not disclose an "inductive coupler" or a "conductor arrangement" and cite the terminology used by Harada, where the Examiner's inductive couplers and conductor arrangements are primary and secondary windings of a transformer with a physically separated core. Although the examiner does not disagree with the semantic differences, the examiner respectfully disagrees that the features as claimed distinguish the claimed invention over the prior art of record. Applicants have not explained how the structures of Harada are not structurally the same as the claimed conductor arrangement and couplers;

however, in the interest of expediting prosecution, the examiner shall elaborate upon the interpretation of the claim limitations as they pertain to the above rejections.

First, the term "inductive coupler" implies no inherent structure insofar as the device couples electrical elements in an inductive manner. As is clearly seen in Figs.3-7, 9 and 10 of Harada, the cores 17 and 18 are coupled inductively to one another and to the conductor arrangements 16 and 19, and therefore, are reasonably considered to be "inductive couplers."

Second, the term "conductor arrangement" implies no inherent structure insofar as the device conducts electricity. It is clear in Figs.1-7, 9 and 10 of Harada that the windings 16 and 19 are wires, electrical conductors, wound around magnetic cores. The groups of these elements around the circumference of the gantry form the "conductor arrangement."

Third, it is also clear that the inductive coupler 17 is inductively coupled to conductor arrangement 19, and the inductive coupler 18 is inductively coupled to conductor arrangement 16, where energy is transferred via these electromagnetic couplings from the stationary part to the rotating part. The claim limitations drawn to these relationships are quite broad in scope. The claim limitations do not state specific structures for performing these functions, nor to the claim limitations exclude intervening elements, such as the core 17 in the context of claim 14, or the core 18 in the context of claim 27.

Finally, Figs.8 and 10 of Harada show that the inductive coupler 18, exclusively based upon position, is engaged with a section of an entire length of the conductor arrangement 16, where the conductor arrangement 16 is a series of segments continuously arranged around the entire perimeter of the stationary part. Harada specifically teaches the use of equal multiples of segments in order to improve reliability (col.5, lines 17-19). Again, the claim limitations

directed to this relationship are broad. A "conductor arrangement" is not limited to a single wire, which appears to be implied by Applicants' arguments. Therefore, the claimed "length" is not limited to the length of an individual conductor that forms part of the "conductor arrangement."

Therefore, for at least these reasons, Applicants' arguments are not persuasive.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THOMAS R. ARTMAN whose telephone number is (571)272-2485. The examiner can normally be reached on 9am - 5:30pm Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Thomas R Artman /TRA/
Examiner
Art Unit 2882

/Edward J Glick/
Supervisory Patent Examiner, Art Unit 2882